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# PSYCHOLOGICAL LITERATURE.

## I.—NERVOUS SYSTEM.

*Ueber das Verhältniss der experimentellen Atrophie und Degenerations-Methode zur Anatomie und Histologie des Centralnervensystems.* Ursprung IX, X, und XII Hirnnerven. Dr. AUG. FOREL unter Mitwirkung von Dr. MAYSER und Dr. GANSER. Mit einer Tafel. SEPARAT-ABDRUCK AUS D. FESTSCHRIFT DES FÜNFZIGJÄHRIGEN. Doctor JUBILÄUM der Herrn Prof. Dr. KARL WILHELM von NÄGELI in München und Geheimrath Prof. Dr. ALBERT von KÖLLIKER in Würzburg. Zürich, 1889.

This paper explicitly contains nothing new. In his clear and emphatic way Forel sets forth the value of the method of experimental atrophy and degeneration, and shows the utter impotence of the view that a so-called anatomical problem is to be dealt with by means of traditional anatomical methods. Any method, or better, every method which is applicable must be employed, and only results which are obtainable by several methods have a right to be regarded as well established. The method of degeneration is illustrated by what it has contributed to our knowledge of the medullary centres of IX, X and XII nerves. To those who wish to know what the method of v. Gudden is and can do, and to those who are weary with the much reading of sapless anatomy, this paper will be a delight.

*Cerebral Localization.* DAVID FERRIER, M. D. Croonian lectures—Lancet. June 7, 14, 21, 28, July 5, 12. 1890.

In these six lectures the author goes over the entire subject, laying special stress on the centres in man. For these lectures some new experiments have been specially made, and these are of particular interest from the bearing they have on Ferrier's own views.

The first lecture opens with an account of the comparative physiology of the cerebral hemispheres, in which the author draws largely on the work of Steiner, Schrader, Goltz and others. The reactions of the shark, bony-fish, frog, bird (pigeon), and mammals (rabbit and dog), are described, after more or less complete removal of the cerebral hemispheres. Following this is a brief historical account of the work on localization, in which Ferrier points out the unsatisfactory nature of the evidence for absolute and relative centres, as advocated by Exner, gives Beevor's figure for the relations of the fibre-bundles in the internal capsule—as derived from recent experiments on direct stimulation in that locality—and passes to the arguments in favor of the direct excitability of the cortical cells—the best of which are the tetanic response to single stimuli, and the longer time taken for reaction when the cortical cells are present.

The second lecture deals with the results of electrical stimulation of the cortex—mainly in monkeys—and diagrams of the localizations of Beevor and Horsley and others are given. Schäfer has reported movements of the eyes in monkeys which stand in a definite relation to the portion of the occipital lobes stimulated. Ferrier admits the general fact, but still contends that more precise movements can be gotten from the stimulation of the angular gyrus. After giving an account of the

results of stimulation of the cortex in man, the author alludes to the completeness with which centres may be separated. His position has been that of a complete separation, and although he does not abandon this view now, he nevertheless argues for the great difficulty of demonstrating it. In considering the visual centre, Ferrier sees in the experiments of Schäfer just mentioned and those on the latent period of excitation for this region a confirmation of his view that the motor reactions here obtained are reflexes from sensory stimulation. The evidence is by no means convincing. The visual area is the occipito-angular region. The relative values of the angular and occipital regions are by no means easy to determine, but Ferrier grants more significance to the occipital region than on previous occasions. It appears that injury to the occipital lobes causes crossed hemiopia, while injury to the angular gyrus produces blindness or amblyopia of the opposite eye. Destruction of both the angular gyrus and the occipital lobes is the only lesion which gives a permanent result. Brown and Schäfer's further investigations would appear to show that removal of the occipital lobes alone is capable of producing a complete and permanent blindness. Ferrier would explain this result by incidental injury to the angular gyri. For Ferrier the angular gyrus is the centre for central vision. As against Munk, he points out that no sensory disturbance—save the visual one—follows its removal, and that the gyrus has some slight connection with the eye of the same side. On reviewing the clinical evidence bearing on the visual centre, Ferrier does not find it to support the views of Seguin and Nothnagel—that the cuneus is the most important region in man, but would explain the connection between lesions of the cuneus and disturbances of vision by injury to the optic radiation thus brought about. In the discussions of the visual centres in the lower vertebrates Ferrier introduces an interesting experiment in which the physiological proof for partial decussation of the optic fibres in the owl is strong, though it has not yet been anatomically demonstrated.

In the fourth lecture he takes up the auditory centre. From his previous, as well as from fresh experiments to determine the centre for this sense, Ferrier concludes that the caudal portion of the superior temporal gyrus is the centre. Clinical evidence supports this view, but Schäfer opposes it on experimental grounds. At present the results appear irreconcilable. In discussing the location of this centre in dogs—where it occupies not the first but the second temporal gyrus—Ferrier takes occasion to suggest that what appears to be the first temporal gyrus in this animal is really the homolog of the insula in the higher forms. If this view be correct, then the position of the auditory centre is homologous in the primates and carnivora.

The centres for tactile sensibility are next discussed. As an introduction, the views concerning the paths in the spinal cord and some new experiments on monkeys are given, but all without establishing any positive conclusion. Ferrier's own observations on the disturbances of tactile sensibility after interference with the hippocampal gyrus and those of Horsley and Schäfer on similar disturbance from destruction of the gyrus fornicatus, are described in the opening of the fifth lecture, and he concludes that in the limbic lobe we have the centre for cutaneous sensibility. Thus far no evidence has been given for subdivisions of this centre, but it would appear that in each hemisphere it is connected with both sides of the body, though mainly with the opposite side.

For the olfactory and gustatory centres, both experimental and clinical evidence is scanty and the former contradictory. Relying mainly on his own experiments and the suggestions of comparative anatomy, Ferrier maintains that these centres are in hippocampal lobule and the tip of the temporal lobe.

In the sixth and last lecture the bilateral connections of certain cortical centres—such as those for the trunk—are discussed. It would appear that there is never any recovery of function due to the assumption of new functions by other parts of the cortex, but that the apparent restitution depends ultimately on this bilateral connection. It would further appear that the associated movements of limbs on opposite sides of the body are due to similar anatomical connections. The complete separateness of the motor areas and those for the dermal senses is maintained on the ground of both experimental and clinical evidence. The motor character of the cortical motor centres and their dependence on the surrounding sensory centres is emphasized. Of the function of that portion of the hemispheres lying in front of the precentral sulcus little can be said, save that it is connected with fibres in the anterior portion of the internal capsule which degenerate downwards on its removal; that it passes over into the centres for the movements of the head and eyes, and that when it is removed both men and animals show some impairment of intelligence.

*The So-called Motor Area of the Cortex.* EDWARD B. LANE, M. D. American Journal of Insanity. April, 1891.

The author examines some of the evidence for the motor character of certain regions of the cortex. In pursuing this he discusses the muscle sense, aphasia in its various forms, and the very interesting cases of "motor hallucinations" described by Tamburini and Séglas. In these cases the patient detected the words which are spoken to them, or better through them, or which they are forced to speak (!) not through an auditory sensation, but by means of the "movements of their own tongue," to employ their expression. In the case of Tamburini the tongue could be seen to move at the tip, but when held motionless (?) the hallucinations still occurred. Further, while the patient is pronouncing one group of words she feels at the same time others forming in her mouth. The author concludes strongly in favor of the sensory nature of the so-called motor cortex.

In criticism of this general view a little anatomy will assist us. (Supposing that motor cells, or those giving rise to efferent impulses, exist predominantly in the motor regions, they must be started into action by impulses from the periphery—i. e., sensory impulses. One question is then whether these sensory impulses reaching the motor cortex by sensory fibres there find sensory, or better central, cells with which they connect and by way of which they act on the motor cells, or whether the sensory fibres act directly on the motor cells. Histology does not enable us to decide the point, though pending a decision the latter view has been generally accepted. That the motor region contains a very large number of cells that carry efferent impulses from the cortex, we know from the make up of the internal capsule, and the pyramidal tracts, and the question here is, whether these peripherally discharging cells have some sensory function. This has been usually answered in the negative. We do not say that these usual views are correct, but think that the detailed anatomy of the cortex as well as the clinical facts should be admitted into so important a discussion. REV.)

*Hemianopsia.* HENRY D. NOYES. N. Y. Medical Record. April 4, 1891.

In considering hemianopsia as "a visual manifestation of intra-cranial disorder" a number of interesting points are clearly developed. The very large number of instances in which the dividing line in hemianopsia spares the fixation point is important. This occurs in most cases not only of the homonymous form, but also in those of double hemianopsia, as illustrated by some three cases. This immunity of central vision in